APPLIED INSTRUMENTS

Application Note
10/16/2012
Installing a **DIRECTV SWM SL5s KaKu** system with the Super Buddy™ satellite meter

Connections: Coax cable connected from output port of DIRECTV SWM SL5s LNBF to top (SIGNAL IN) port of Super Buddy meter.

Meter set-up
Press the **SYST** System soft-key (located near top left corner of LCD screen) to enter the System Setup menu. Then select the following:

- REGION your geographic region
- SERVICE **DIRECTV**
- SYSTEM **SWM LNB**
- LNB MODEL **SL5s Pointing**
- SWITCH TYPE defaults to **Manual**

*To make selections, arrow up or down to the item to change and press **Enter**, then arrow up or down to the desired option and press **Enter**. Press **EXIT** or **DONE** to return to Run Mode*

Antenna Pointing
Install the mast plumb, preset the antenna vertical angle, mount to mast, and grossly align azimuth. You may want to use the ZIP zip code look-up feature to obtain rough antenna settings (magnetic compass heading, elevation, and tilt/skew).

After completing the System Setup:
1) Press DONE or EXIT to return to the main Run screen.
2) Adjust the tilt or skew of the dish based on the parameters provided by the Super Buddy's zip code lookup feature (ZIP soft-key in lower left corner of main Run screen).
3) Connect a coax jumper cable from the top (Signal-In) port of your Super Buddy meter to a LNBF output port.

Rough Alignment of Azimuth and Elevation of dish on 101°W Satellite
To find the 101° satellite:
- Press the LNB soft-key (located on middle right side of LCD screen) to apply power to the LNB. LNB1 is for the 101° satellite.
- Wait approximately 20 seconds after pressing LNB power soft-key before beginning dish pointing.
- Adjust the azimuth and elevation of the dish to optimize the alignment by maximizing the signal level (left bar graph) and signal quality (right bar graph) on the 101 satellite. Align antenna until a LOCK status is obtained.
- After you see LOCK, press ID soft-key (located on middle left side of LCD screen) and verify that the 101 satellite has been found.

Rough Alignment of Tilt / Skew of dish on 119°W Satellite
To check the status of the 119° satellite:

• Press the LNB soft-key again to switch to LNB2 (22 kHz). LNB2 is for the 110° & 119°
satellites.

• Adjust the tilt / skew of the dish (rotate dish about a point) to optimize the alignment by maximizing the
signal level (left bar graph) and signal quality (right bar graph) on the 119° satellite. Align antenna until a
LOCK status is obtained.

• After you see LOCK, press ID soft-key (located on middle left side of LCD screen) and verify
that the 119 satellite has been found.

Dithering (Fine-Tuning) of Azimuth/Elevation of dish on 101°W Satellite
Complete the dithering/fine tuning process to ensure that you're aimed at the center of the beam,
adjusting the azimuth and elevation of the dish using the fine adjustment screws while looking at the 101
satellite, as directed by DIRECTV. This should ensure good signal reception from all five satellites (99,
101, 103, 110, 119) if your mast/pole is plumb.

Dithering (Fine-Tuning) steps:
1) Press the LNB power soft-key two times to return to LNB1 (the 101 satellite).
2) Wait approximately 20 seconds after pressing LNB power soft-key before beginning dish pointing.
3) Using the Azimuth fine-tuning screw bolt, turn clockwise and counter-clockwise until you get the
highest signal level (meter's left bar graph) and signal quality (right bar graph) on the 101
satellite.
4) Using the Elevation fine-tuning screw bolt, turn clockwise and counter-clockwise until you get the
highest signal level (meter's left bar graph) and signal quality (right bar graph) on the 101
satellite.
5) Record the signal level (i.e. with pen and paper) that is displayed on meter's left bar graph for 101
satellite,
6) Set the Elevation plastic dial to zero.
7) Using the Elevation screw bolt, turn 4 full turns counter-clockwise, record the signal level
(displayed on meter's left bar graph).
8) Rotate the bolt clockwise counting the number of turns until the same signal level is reached.
9) Divide this number of turns by 2.
10) Turn the Elevation plastic dial to zero.
11) Rotate the Elevation screw counter-clockwise by the divided number of turns
12) Tighten the Elevation bolts down. The signal level should be the same or higher than with your
rough alignment.
13) Record the signal level (i.e. with pen and paper) for 101,
14) Set the Azimuth plastic dial to zero.
15) Using the Azimuth screw bolt, turn 4 full turns counter-clockwise, record the signal level.
16) Rotate the fine-tuning bolt clockwise counting the number of turns until the same signal level is
reached.
17) Divide this number of turns by 2.
18) Turn the Azimuth plastic dial to zero.
19) Rotate the Azimuth screw counter-clockwise by the divided number of turns,
20) Tighten the Azimuth bolts down. The signal level should be the same or higher than with your
rough alignment.

DIRECTV recommends roughly adjusting the azimuth and elevation of the dish while looking at the
101 satellite, roughly adjusting the tilt/skew of the dish while looking at the 119 satellite, and then
performing their fine-tuning/dithering process while looking at the 101 satellite. Please refer to
DIRECTV's official instructions regarding their dithering/fine-tuning process for more information.
The Super Buddy satellite meter cannot identify or get a LOCK on the DIRECTV 99 & 103 Ka
satellites. The Super Buddy cannot tune to the 99 or 103 satellites through a SWM LNB, nor cannot it
display signal level (dBm) on your left bar graph, signal quality (right bar graph), or LOCK for the
DIRECTV 99 & 103 Ka satellites. The Super Buddy meter isn't able to demodulate or
obtain a lock on the DIRECTV Ka signals due to the DVB-S2 modulation type and level of

encryption. The DIRECTV IRD/satellite receiver can show you the signal quality of the 99 & 103 Ka satellites signals because the receiver is compatible with the signal type and encryption type found on the Ka satellites.

Secure dish and verify adequate signal level and quality:
• Check all nuts and bolts and make sure they are tightened to specification. Pay close attention to the LNB lock down bolts. They must be installed wrench tight to prevent LNB movement.
• Check for passing scores (green check marks) on the TV screen that's connected to the powered DIRECTV receiver for the 99, 101, 103, 110, and 119 satellite transponders. If the satellite receiver doesn't pass, then the technician should not leave the site and must improve dish alignment to reach a passing score.

Checking signal level and quality of SWM channels, if desired:
After aligning the DIRECTV SWM 5-LNB dish (model SL5s), as an optional step, if you want to look at the signal level and signal quality of all 9 SWM channels, use the following System Setup:

- REGION your geographic region
- SERVICE **DIRECTV**
- SYSTEM **SWM-LNB**
- LNB MODEL **SWM Ch Verify**
- SWITCH TYPE **none**

1) After completing the System Setup, press DONE or EXIT to return to the main Run screen.
2) With a coax jumper cable still connected from the top (Signal-In) port of your Super Buddy meter to the LNBF output port, press the LNB soft-key to apply power to the LNB.
3) Wait approximately 20 seconds after applying LNB power to SWM LNB before taking measurements.
4) Use your up/down arrow keys to scroll through the 9 SWM channels. You will be able to see the signal level (left bar graph) and signal quality (right bar graph) and LOCK status of all 9 SWM channels.

Note: When powering the DIRECTV SWM LNBFs (models SL3S or SL5S), nothing will be shown on the LCD screen of the meter (signal level or signal quality) for approximately 20 seconds until after LNB power is applied (whether you use the DIRECTV power inserter or use the Super Buddy directly to power the LNBF. After you turn the LNB power on, you must wait approximately 20 seconds before beginning to align the dish. After those 20 seconds, everything will refresh instantly as it normally does. We believe that this delay is caused by the SWM LNBF going into diagnostic mode.